

The Genus *Paratrichogramma* Girault

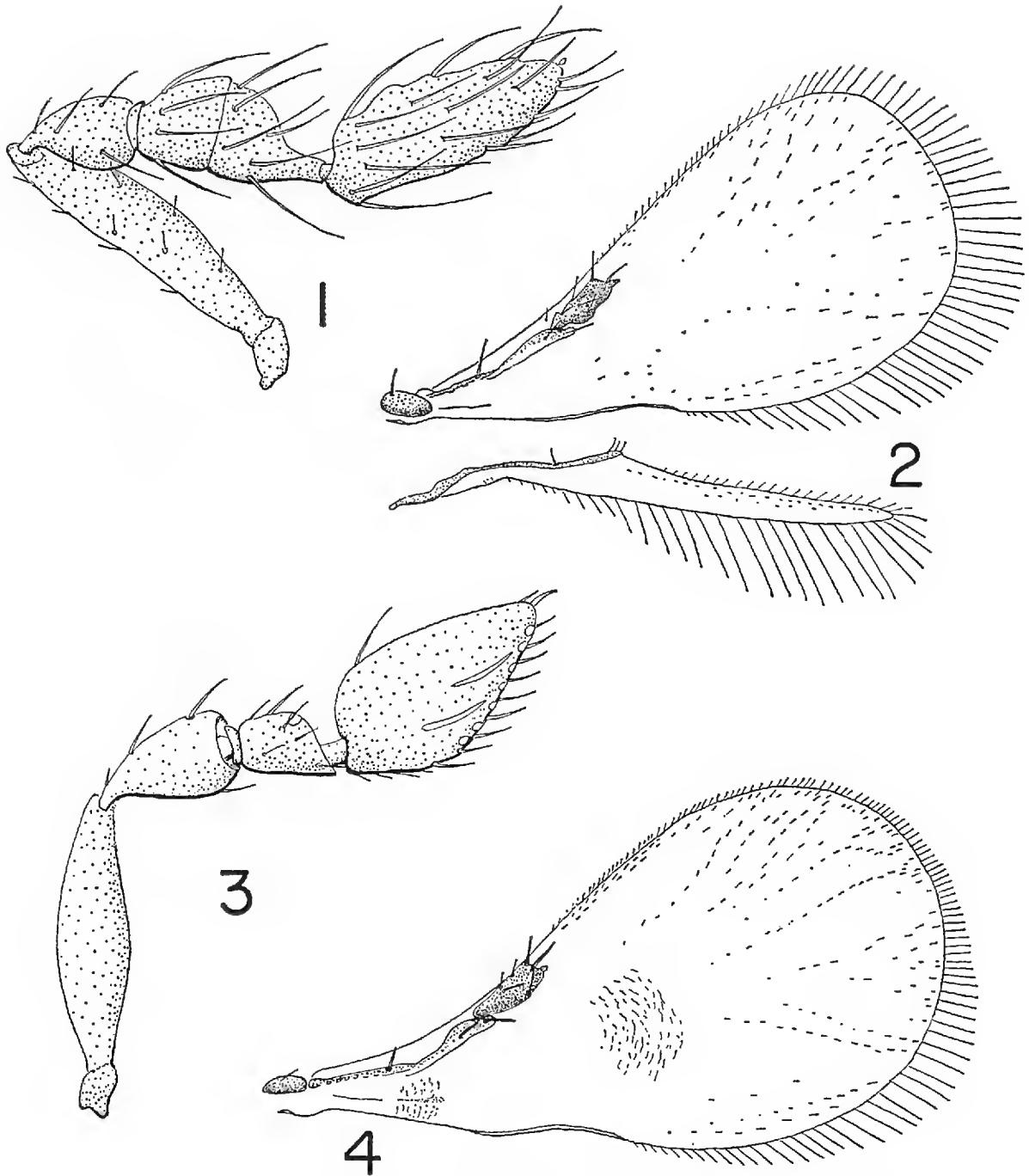
(Hymenoptera: Trichogrammatidae)

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The genus *Paratrichogramma* is easily separated from the 71 other valid genera in the family Trichogrammatidae as recognized by Doutt and Viggiani (1968). Its female antennal formula of a single annellus, a single flagellomere, and a solid club is unusual and when this character is combined with the distinctive wing venation the genus is readily set apart. Similarly the males are almost unmistakable, and would not be easily confused with other members of the family because of the peculiar bottle-shaped second funicle segment.

There are two species described from Australia, namely *P. cinderella* Girault, which was illustrated by Doutt and Viggiani (1968), and *P. fusca* Girault. The type of *P. fusca* is apparently lost, for Girault deposited it in the Queensland Museum with the number "Hy/803" and indicated (Girault, 1912) that it was mounted "in xylol-balsam with the type female of *Polynema spenceri* Girault and two trichogrammatids." I have examined a slide in the Queensland Museum which does have the type of *P. spenceri*, a male of *Trichogramma australicum*, and a chalcid body with several fragmented legs but no tarsi, no head, no antennae, and no wings. The slide is labelled "*Paratrichogramma fusca* Girault ♀ Hy/803", and the locality data match the original description. In red ink the label also has the number 3415, which corresponds to the number given *P. fusca* by Girault in an unpublished revision of his collection. However, in red ink on the slide label under the designation "*Paratrichogramma fusca*" Mr. Girault has also written "destroyed." All of this evidence indicates that the type specimen of *P. fusca* was originally on this particular slide, but now it must be considered as missing or destroyed. This is especially unfortunate because Girault's original description is too brief and inadequate to form a satisfactory concept of the missing specimen. Perhaps the most useful and reliable distinction is that Girault considered *P. fusca* to have forewings more densely ciliated discally than *P. cinderella* with about 18 long lines of cilia instead of 5 short lines from the apex as in *P. cinderella*.

¹ Present address: 9240 S. Riverbend Avenue, Parlier, Ca. 93648.

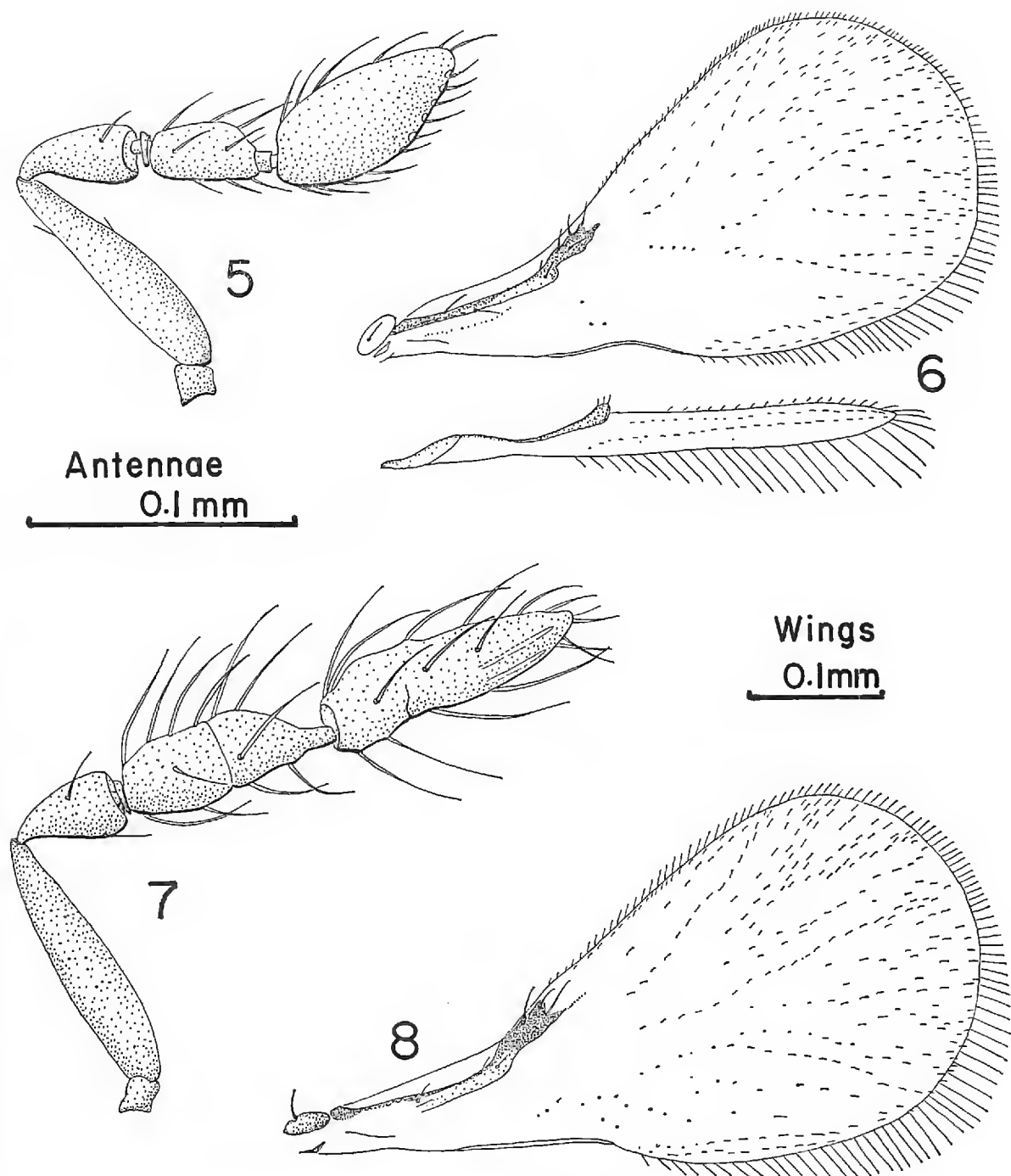


FIGS. 1-4. *Paratrichogramma pretoriensis*. FIG. 1. Male antenna. FIG. 2. Male wings. FIG. 3. Female antenna. FIG. 4. Female forewing.

There are 4 specimens of *P. cinderella* at the Queensland Museum and one at the U.S.N.M. The distribution from these individuals is indicated as Queensland and Thursday Island (Torres Strait). This constituted the extent of our information on the genus until a few *Paratrichogramma* were recognized in collections from California and South Africa. These represent new species and are described as follows:

***Paratrichogramma pretoriensis* Doult, new species**

FEMALE.—Length 0.45 mm; body color golden brown, head yellow gold, eyes and ocelli bright red, antennae light brown, coxae dark, trochanters white, femora



FIGS. 5-8. *Paratrichogramma californica*. FIG. 5. Female antenna. FIG. 6. Female wings. FIG. 7. Male antenna. FIG. 8. Male forewing.

and tibiae white with median area dark, banded, apex of tibiae and third tarsomere dark, wings hyaline, venation brown. Head, frontal view slightly wider than long, face deeply impressed, roughly sculptured; eyes large; toruli low on face, ocelli large, prominent; mandibles with two pointed teeth, third blunt; eyes without spicules; antennae as Fig. 3 with long scape, large pedicel, single annellus, single flagellomere with stalk-like peduncle attachment to single club. Scutum and scutellum with light, reticulated sculpture; thorax broad as abdomen, slightly over half length of abdomen, phragma large, wide, parallel sided, broadly truncate at apex, extending to middle of abdomen. Ovipositor small, not exerted. Fore femora longer than tibiae; foretarsi with short basitarsus; middle and hind tibiae

longer than femora, basal tarsomeres as long or longer than succeeding segments. Wings as Fig. 4 with broad marginal vein and sessile stigma; center of wing disc with rough leathery texture.

MALE.—Body color similar to female, slightly darker. Wings dusky at base; head, legs, antennae colored as female. Face impressed, eyes smaller than female; antennae as in Fig. 1 with peculiar bottle-shaped second funicle. Thorax as wide as abdomen, half length. Scutum with reticulate sculpture only on anterior portion, scutellum smooth. External genitalia large. Wings as in Fig. 2.

Paratrichogramma pretoriensis is readily differentiated from *P. cinderella* by the broader marginal vein and more abundant discal cilia of the forewings; and from *P. californica* by the reticulated sculpturing of the scutum.

Holotype female and allotype from suction trap 1 (1029), PRETORIA, SOUTH AFRICA, February 1958. D. P. Annecke. Paratype male from suction trap, Pretoria, South Africa, March 1958. D. P. Annecke. Holotype and allotype to be deposited at Plant Protection Research Institute, Pretoria. Paratype at Division of Biological Control, University of California.

***Paratrichogramma californica* Doult, new species**

FEMALE.—Length 0.45 mm, body dark brown, except propodeum golden, head bright golden yellow, eyes and ocelli crimson, antennae pale gold, legs light brown to smoky becoming pallid at tips of tibiae and basal tarsomeres, but hind coxae dark brown, wings hyaline, smoky near base, veins brown. Eyes with inner margins straight, eyes extend three-fifths length of face; toruli low on face; face deeply impressed, sculptured by transverse ridges; mandibles with two distinct teeth and truncate shoulder; antennae with long scape, pedicel slightly shorter than single funicle segment, club obliquely truncate (Fig. 5). Body compact, stout; scutum without distinct reticulated sculpture as occurs in *P. pretoriensis* and *P. cinderella*. Thorax slightly shorter than abdomen, phragma large, extending nearly to middle of abdomen. Ovipositor about half length of abdomen, small hypogynium at base, not exerted. Legs somewhat slender, rather long for compact body, hind coxae especially elongate, fore femora and fore tibiae about equal length. Wings as in Fig. 6.

MALE.—Body color pattern basically as female but darker, with very dark band across abdomen. Head with transverse sculpturing similar to female, eyes smaller, extending just half length of face. Antennae (Fig. 7) with peculiar bottle-shaped second funicle, club has suggestion of fused basal segment. Scutum with reticulations on anterior-lateral areas. Phragma extending posteriorly three-fifths length of abdomen. Wings as in Fig. 8.

Holotype female, allotype, one paratype female HUB, CALIFORNIA, 27 August 1956, from *Atriplex bracteosa*. C. E. Kennett. One paratype female, from *Atriplex bracteosa*, 4 mi. W Kearney Park, Fresno Co., Calif. 13 September 1951. C. E. Kennett and C. B. Huffaker. Type series at Division of Biological Control, University of California.

LITERATURE CITED

- DOUTT, R. L. AND G. VIGGIANI. 1968. The classification of the Trichogrammatidae (Hymenoptera: Chalcidoidea). Proc. Calif. Acad. Sci., 35(20): 477-586.
- GIRAULT, A. A. 1912. Australian Hymenoptera Chalcidoidea—I. Mem. Queensland Mus., I: 66-189.
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SCIENTIFIC NOTE

***Leptocoris rubrolineatus*, an Occasional Predator of the California Oakworm, *Phryganidia californica* (Hemiptera: Rhopalidae; Lepidoptera: Diophtidae).**—In coastal California, the western boxelder bug, *Leptocoris rubrolineatus* Barber, occurs in large numbers on bigleaf maple, *Acer macrophyllum* Pursh. The adult bugs are often common on nearby vegetation, including coast live oak, *Quercus agrifolia* Nee, on which feed larvae of the California oakworm, *Phryganidia californica* Packard.

Boxelder bugs have heretofore been recorded feeding only on plant hosts (Metcalf, Flint, and Metcalf, 1962, *Destructive and Useful Insects*, 4th ed. McGraw-Hill, N. Y.). While investigating mortality of the California oakworm, I noticed *Leptocoris* adults feeding on oakworm pupae. The oakworm forms a hanging chrysalid with no surrounding cocoon. A careful search of a coast live oak trunk near the campus of California State University, Hayward, on 2 July 1970 revealed 109 oakworm pupae, of which 8 were being fed upon by adult *Leptocoris*. The tree was 12 m from the trunk of a bigleaf maple swarming with boxelder bugs. A search of oaks 45 m and 51 m from this maple revealed few *Leptocoris*, none of which were feeding on oakworm pupae.

I collected 10 adult *Leptocoris* and placed them in a plastic petri dish with 50 oakworm pupae. They fed readily on the pupae though no alternate food was available. Pupae upon which the bugs fed did not survive. In the field, for up to 45 minutes each, I followed individual boxelder bugs that had completed feeding on oakworm pupae, and in no case did they feed on additional pupae. To estimate the extent of predation by *Leptocoris*, I examined oakworm pupae from several oaks growing within 20 m of maples, but I was unable to accurately distinguish feeding sites of *Leptocoris* from oviposition punctures of parasitic Hymenoptera, which were also common in the area.

Harville (1955, Microent. 20: 83-166) makes no reference to *Leptocoris* predation in his discussion of natural mortality of *Phryganidia*. Feeding on oakworm pupae by *Leptocoris* is probably of little significance in oakworm population dynamics because of its localized nature though it is interesting to note a normally phytophagous insect feeding on animal matter.—DAVID J. HORN, *Department of Entomology, The Ohio State University, Columbus, 43210*.